Structures Quiz Review

Key Terms:  
Structure Function Form Force   
Gravity Mass Weight Load  
Dead Load Live Load Dynamic Load Solid Structure  
Frame Structure Shell Structure Combination Structure External Force  
Internal Force Tension Compression Torsion  
Shear Stability Centre of Gravity Beam I‑beam Corrugation Cantilever Truss Arch Dome Structural failure Symmetry Line of Symmetry Aesthetics Ergonomics Repetitive strain injury Universal design

Apart from the terms above you should know the following from the following Chapters

10.1- Structures All Around Us

* Know what is an what isn’t a structure
* Know the purpose of both function and form for a structure

10.2- Forces

* Know how forces work
* Know the difference between an applied force and a non-contact force
* Know how force is made up of two components- magnitude and direction
* Know the difference between Mass and Weight
* Know the difference between load, dead load, live load and dynamic load

10.3 – Classifying structures

* Know how to classify structures
* Know the basics of each type of structure

10.4 – External and Internal Forces

* Know the difference between internal and external forces
* Know how the point of application and plane of application apply to external forces
* Know about the normal force (applied force of objects to counter gravity)
* Know the four main internal forces and what they do

11.1 – Stability

* Know the meaning of centre of gravity
* Know how the centre of gravity and support base relate to stability of a structure

11.2 – Making structures stronger: the beam

* Know what a beam is and what internal forces are in a beam
* Know typical designs for strong beams: corrugation, I-beam, and rebar
* Know what a cantilever is
* Know the types of supports for a beam: tie, strut, gusset

11.4 – Making structures stronger: truss, arch, dome

* Know what a truss, arch, and dome are and why they are strong structural features

11.6 – Structural Failure

* Know what structural failure means and understand that often structural design improves by learning from structural failures
* Know the typical causes of structural failure: bad design, faulty construction, or excessive loads

12.1 – Product Design Process

* Know that a lot of thought goes in the process of designing a new product or structure
* Know some of the design factor, manufacturing factors, and sales factors

12.3 – Symmetry in Form and Function

* Know what symmetry is
* Be prepared to state your opinion on symmetry’s role in aesthetics
* Know symmetry’s role in structural strength

12.4 – Ergonomics: Designing for Human Comfort and Safety

* Know what ergonomics mean and be prepared to give examples of good and bad ergonomic designs
* Know why it’s important for good ergonomic design and human comfort, especially as it related to avoiding repetitive strain injuries

12.6 – Universal Design

* Know the five principles of universal design: equal, flexible, simple, safe and tolerant of errors, and ergonomic
* Be prepared to give some examples of good and bad universal design

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